

# **2022 WATER BODIES ASSESSMENT AND RECOMMENDATION REPORT**

## **ARLINGTON CONSERVATION COMMISSION**

**MARCH 2023**



**Mystic River Front Restoration Project (Photo by Susan Chapnick)**

## 2022 ANALYSIS

The Arlington Conservation Commission (ACC), through its Water Bodies Working Group (WBWG), continued the assessment of fourteen water bodies in the Town of Arlington, including five lakes and ponds and nine streams. A majority of these are negatively impacted by polluted runoff and stormwater discharges due to the highly urban nature of Arlington and surrounding towns. Most of these water bodies also have excessive aquatic invasive plants that degrade water quality, impede recreational use, and degrade aesthetics. In determining which water bodies could benefit from management measures using Town funding, the WBWG takes a triage-based approach:

1. Water bodies that are in generally good shape, do not need much help, or whose issues are being addressed by other agencies or funding sources, e.g., Upper & Lower Mystic Lakes and Mystic River
2. Water bodies with some issues that could benefit from directed intervention, e.g. Spy Pond, Arlington Reservoir, Hills Pond, McClennen Park Detention Ponds (Reeds Brook)
3. Water bodies that are in poor shape with many issues that would need major efforts and additional funding to improve, e.g. Mill Brook and Alewife Brook.

Though the chemical treatments of several water bodies must continue for the coming year to control aquatic invasives and harmful algal blooms, the WBWG is focused on obtaining the appropriate data to develop comprehensive proactive management plans for Spy Pond, Arlington Reservoir, and Hills Pond. Our goal is to develop management plans where chemical use is only one step in concert with strategies to reduce nutrient inputs to the water bodies, remove and manage the spread of aquatic invasives through non-chemical means, and investigate opportunities to restore native aquatic plant communities.

Also a number of water bodies in Arlington (Spy Pond, Hills Pond, Mill Brook, Alewife Brook and the Mystic Lakes) are considered impaired by the Massachusetts Department of Environmental Protection (MADEP) and are included in the town's Stormwater Management Plan managed by the Arlington Department of Public Works (DPW). The focus of this program is to reduce nutrient loadings that can detrimentally affect water quality. There are a number of ongoing projects to improve the water quality of those resources.

Based on the 2022 analysis, the WBWG has identified the following priority locations for 2023.

## ARLINGTON RESERVOIR

Arlington Reservoir is a Town-owned water body on the Arlington-Lexington border with invasive water chestnuts that form dense, impenetrable mats at the water's surface, which impair public use and water quality. These plants have been harvested mechanically every summer for many years. They were not harvested in 2021 because construction activities prevented access. In 2022 with the new access ramp recently completed, harvesting resumed. However, the mechanical harvesting started late for a number of contractual and scheduling reasons. The Mystic River Watershed Association (MyRWA) was not able to organize hand harvesting this year, but may again in 2023. However, the Reservoir Committee and other sponsors organized volunteers a hand harvesting event with over thirty volunteers in August.





**Volunteers hand harvesting water chestnuts at the Reservoir in August. (Photo by Charu Tevali)**

This water body was assessed as part of the Reservoir Master Plan project. One recommendation of that report was that the water chestnuts be harvested earlier than they have been in recent years in order to reduce seed production. In 2020 the Water Bodies Fund supported the development of the “2020 Aquatic Plant Survey and Management Plan” to evaluate the reservoir and its management practices. That study found:

*Based on the data collected and observations during the survey, Arlington Reservoir is a shallow, eutrophic waterbody that has overall dense growth of aquatic vegetation. Of the five invasive species observed, three are very aggressive in their growth habits – water chestnut, curly-leaf pondweed, and Eurasian watermilfoil. As a result, there can be a significant decline in native vegetation and water quality. Management of these three species (and other non-native species) can improve water quality, recreational use, wildlife habitat, and aesthetic value.*

The ACC is reviewing options for Reservoir management and may recommend additional actions beyond mechanical water chestnut harvesting.

The master plan for the Reservoir focused on the upland land areas and invasive plant control there, but also included some bank restoration and wetland plantings.

The Reservoir, despite invasive plants, continues to be a healthy environment for fish, turtles, muskrats and many birds. It is also the birding spot in Arlington with the most observed species.

#### Recommendations/Priorities for 2023

- Arrange for a timely mechanical harvesting of water chestnuts and support hand harvesting efforts.

- Investigate alternatives to hiring a contractor, including the possible town purchase of a mechanical harvester, in lieu of the annual \$26,000 cost and to allow for more timely aquatic invasive control for this water body and others in town that may benefit from this management technique.

## **HILL'S POND**

This small pond is found in the heavily used Menotomy Rocks Park and suffers from water quality and invasive plant problems. The Conservation Commission recommends continuing aeration, strictly limiting polluting activities near the pond or in areas that drain into the pond, maintaining a no-mow vegetated buffer strip around the pond four to ten feet wide of grass or natural vegetation, and low-dose chemical treatments with aquatic herbicides to control algae and other detrimental water plants. Monthly site visits with proactive treatments through the summer of 2022 proved successful in reducing invasives. A harmful algal bloom developed in the early fall, owing in part to drought and extreme heat, and treatments had to be curtailed in compliance with state regulations. The Conservation Commission will resume treatment.

### Recommendations/Priorities for 2023

- Monitor and investigate options for maintaining a healthier water body, including maintenance of 4 aeration pumps and establishing a no-mow buffer strip around the pond.
- Update permitting for next three years of treatment.
- Regularly test for the presence of cyanobacteria.

## **MILL BROOK**

Mill Brook water quality stayed at D+ in 2021 (EPA/MyRWA Water Quality Report: <https://mysticriver.org/epa-grade/>). Mill Brook's poor water quality is basically due to stormwater runoff; however, the possibility of illicit discharges are also being investigated by the Department of Public Works. Where not channelized, the brook and its adjacent shore provide valuable wildlife habitat and opportunities for nature views.

Recent work in Wellington Park to create more flood storage and improve habitat value in Mill Brook was completed in 2022. Future projects that will improve Mill Brook's resource area values include a redesign of Cooke's Hollow and Meadowbrook Park and possible bank restoration work near Hurd Field.

The current project underway at the Mirak-Schwamb Mill site will add public access and more natural vegetated areas along the brook.

### Recommendations/Priorities for 2023

- Pursue restoration of Mill Brook between the Reservoir and Hurd Field with CPA funds sought for FY2024.
- Develop redesign of Cooke's Hollow and pursue funding for redesign of Meadowbrook Park.
- Evaluate ways to minimize stormwater runoff contaminants.

## MCLENNEN PARK DETENTION PONDS ON REEDS BROOK

Residents abutting the detention ponds approached the Department of Planning and Community Development to discuss flooding concerns and the lack of maintenance of the detention ponds. DPCD determined that the preliminary monitoring period, which was meant to establish routine maintenance, was never conducted. The ponds require a new survey to determine how existing conditions differ from the design, and possible work to return to design conditions, to be followed by the established monitoring period. DPCD will coordinate this work with the Engineering Division of Arlington DPW.

In 2020, the ACC in conjunction with the Park and Recreation Commission and the Department of Public Works, established a vegetated buffer strip around the ponds to control runoff and to improve wildlife habitat. This may be expanded in the future. This buffer strip was mown in 2022 and needs to be reestablished.

### Recommendations/Priorities for 2023

- Establish a buffer zone around the detention ponds with signage for no-mow areas.
- Investigate sedimentation issues and follow up on DPW maintenance activities.

## SPY POND

Spy Pond is a 103 acre kettle hole pond in East Arlington. Its northeastern shore features Spy Pond Park, Boys and Girls Club, and Scannell Field. Spy Pond is a popular destination for walking, birding, picnics, fishing, boating, rowing, and sailing. It is one of Arlington's most heavily used open spaces for recreation. Left untreated, invasive plants impair recreational use.

Spy Pond has invasive plant problems - both in the water and along the shores. The land surrounding the pond is mostly managed landscape. Runoff from this land combined with stormwater outlets contribute to nutrient loading and low oxygen levels.

### Current Situation

Invasive Curly-leaf pondweed covered much of the littoral (nearshore) zone in late May, preventing the use of the south basin by the Arlington-Belmont rowing Crew. A dozen water chestnut plants were also found and removed by hand. A new invasive, variable milfoil was found in scattered locations in September. There is no native aquatic vegetation now growing in the pond.

### Recent Activities

Work by the contractor *Parterre Ecological* has included: Identification of all existing invasive plant species at Spy Pond Park · Manual removal (by hand-pulling or cutting) of all invasive plant species · Select herbicide application treatment techniques to invasive plant species by MA licensed and insured pesticide applicators.

The consultant *SWCA Environmental Consultants* of Amherst along with *Water and Wetland* of Upton produced a report on the health of Spy Pond, including its water quality and the state of its aquatic vegetation.



**Friends of Spy Pond Park Work and Fun Days**

(<https://patch.com/img/cdn/users/22477619/stock/raw/2015035512bf657a7bd.JPG?width=695>)

The SWCA findings and recommendations found the presence of significant historic contamination which, together with stormwater runoff, contributed to an environment for opportunistic and invasive species that crowd out other pond life. The report also reviewed past management efforts. SWCA's conclusion was that the previous contractor over-treated the pond with aquatic herbicides to the detriment of the native vegetation.

There have been extensive volunteer efforts undertaken that have focused on water body health, including: the distribution of 6,500 fertilizer flyers to households in the watershed by Arlington high school students; and invasive plant control and general clean up by the Friends of Spy Pond Park and the Spy Pond committee.

#### Recommendations/Priorities for 2023

- Closely monitor the pond to ensure timely treatments before problems occur.
- Investigate the introduction of native aquatic plants back into the pond.
- Consider non-chemical control alternatives.
- Develop a comprehensive long-term management plan for Spy Pond.
- Facilitate shoreline stabilization work to ensure water quality of the pond.

## ALEWIFE BROOK

This stream runs along the eastern border of Arlington in the DCR Alewife Greenway Reservation. This area includes pedestrian and bicycle paths from the Alewife T station in Cambridge up to the Mystic River in Medford. The greenway also includes many native plantings and provides a wildlife habitat, but also many invasive plants as well. The water quality of Alewife Brook in 2021 was a D grade (<https://mysticriver.org/epa-grade/>).

Much of Alewife Brook's poor water quality is due to stormwater runoff, but the area also hosts Combined Sewer Outfalls (CSO) which release untreated sewage into the brook from Cambridge and Somerville in large rainstorm overflow events. Other contributing factors could be contamination from the Little River and the collected sediments in the brook itself. That creates further problems during flood events when sewage contaminated water can flow onto adjacent properties in the floodplain. Approximately 5,000 people live in the 100 year floodplain. This is a problem which requires a regional solution involving the adjacent towns and the state. A local activist group Save the Alewife Brook (StAB) was formed in 2021 to address these issues (<https://savethealewifebrook.org/>). In December 2021, the Arlington Select Board committed itself to working to find a solution.

The parties responsible for the CSOs along the Alewife Brook are the Cities of Cambridge and Somerville, and the Massachusetts Water Resources Authority (MWRA). Arlington has a totally separated sewer system and thus no CSOs. These parties are involved in a hearing process with the Massachusetts Department of Environmental Protection (MA DEP) to develop a new Long Term Control Plan (LTCP) for Alewife Brook. It is expected that this will result in water quality improvements and hopefully the closure of the remaining CSOs. The public is encouraged to participate in this process. Information can be found at the MWRA <https://www.mwra.com/03sewer/html/sewco.htm> and Cambridge websites <https://www.cambridgema.gov/Departments/publicworks/cityprojects/2022/updatedcombinedseweroverflowcsococontrolplan>





**Alewife Brook Under the Mystic Valley Parkway. (Photo by Kristin Anderson)**

#### Recommendations/Priorities for 2023

- Implement green stormwater structures in East Arlington with the assistance of a \$40,000 earmark.
- Work with DPW in implementing measures to improve stormwater runoff.
- Support efforts to obtain state funding for an updated master plan for Alewife Brook and an assessment of the sediments.

### **MYSTIC RIVER**

The Mystic River maintained its water quality rating of B+ in 2022. (<https://mysticriver.org/epa-grade/>). On-the-ground improvements to the Mystic River are led primarily by [Mystic River Watershed Association](#) and other volunteer groups. Over the years, Arlington's Department of Public Works has taken a watershed approach to improve contributing stormwater quality by installing green infrastructure, such as rain gardens and infiltration trenches. Rain gardens and infiltration trenches have been constructed in East Arlington to filter pollutants out of stormwater before its discharge to the Mystic River and Alewife Brook.

This work is managed by DPW and has in past years been funded through Coastal Pollutant Remediation Grants from the Office of Coastal Zone Management (CZM). In 2022, the project was financed with a federal nonpoint source grant from the Environmental Protection Agency (EPA) passed to the Massachusetts Department of Environmental Protection (the Department).

DPW installed twenty-four (24) infiltration trenches in 2022. All were installed in east Arlington with funding received as part of a 319 grant. The locations are shown in the graphic below.





**Locations of infiltration trenches installed by DPW in 2022**

These additions will reduce the amount of pollutants entering Alewife Brook and the Mystic River, improving compliance with the state stormwater permit. The Town received additional grant funding from CZM, which will be utilized to install additional infiltration trenches during Permit Year 5.

Monitoring of the Mystic Riverfront Restoration Project continued in 2022 with invasive plants control along the river. The restoration created more flood storage capacity and is improving water quality by infiltration of stormwater through a newly-created swale coupled with improvements implemented by Arlington DPW upstream of the outfall to increase capacity to capture and infiltrate stormwater expected from extreme weather events. The Memorandum of Agreement between DCR and the Town was signed in 2021 such that this restored riparian habitat and swale can be maintained into the future. The project received a Certificate of Compliance from the Conservation Commission in 2022 for completion of the restoration work.

On January 26, 2022, Arlington hosted its first virtual public meeting to discuss a connection between the Minuteman Bikeway and the bike path along the Mystic River. Arlington completed the concept design and was awarded a \$1,000,000 earmark to advance the project to the construction-ready design stage. The project will pass along Mill Brook, Meadowbrook Park, Lower Mystic Lake, and the Mystic River. The concept design was made with conservation permitting implications in mind and includes enhancements like reduction in impervious surfaces. An advanced concept is slated for 2023 in coordination with partner municipalities and state agencies.

### Recommendations/Priorities for 2023

- Work with DPW in implementing measures to improve stormwater runoff.
- Investigate opportunities for restoring degraded conditions at Town-owned shoreline outfalls at Mystic River, including green infrastructure.

## **CONCLUSIONS**

The Water Bodies Working Group has collected information for all the water bodies evaluated in support of this report. The Conservation Commission recommends that the Working Group monitor other locations that have not been identified above as a priority. All water body recommendations for actions and funding will be reviewed on an annual basis.

We would also like to thank everyone who has been involved in caring for Arlington's water bodies including the Spy Pond Committee, Friends of Spy Pond, Friends of Menotomy Rocks Park, the Reservoir Committee, the Department of Public Works, the Park and Recreation Commission, the Mystic River Watershed Association, and many others.

## **NEXT STEPS & RECOMMENDATIONS**

The individual actions and priorities are described above in the sections for each water body.

## **FUNDING**

This work is made possible by the Water Bodies Fund which is supported by the Town. Detailed financial information is found in the budget which is submitted to the Finance Committee and the Town Meeting each year.

Respectfully Submitted by:

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The WBWG thanks David Morgan, Conservation Agent, for his assistance in preparing this report and also Brad Barber for much of the Spy Pond materials.

We also thank the Department of Public Works both for some of this information and their efforts in protecting Arlington's water resources.

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